

thickness of 0.65 inches (16.5 millimeters).

(c) Except as provided in paragraph (d) of this section, the weight of assumed ice on a vessel that operates north of 42° North but south of 66°30' North latitude or south of 42° South but north of 66° South latitude must be assumed to be at least one-half of the values required by paragraphs (b)(1) and (b)(2) of this section.

(d) The height of the center of gravity of the accumulated ice should be calculated according to the position of each corresponding horizontal surface (deck and gangway) and each other continuous surface on which ice can reasonably be expected to accumulate. The projected horizontal and vertical area of each small discontinuous surface such as a rail, a spar, and rigging with no sail can be accounted for by increasing the calculated area by 15 percent.

(e) The weight and location of ice must be included in the vessel's weight and centers of gravity in each condition of loading when performing the stability calculations required by this subpart.

[CGD 88-079, 56 FR 40393, Aug. 14, 1991; 56 FR 47679, Sept. 20, 1991]

#### § 28.555 Freeing ports.

(a) Except as provided in paragraph (i) of this section, each decked vessel fitted with bulwarks must be fitted with freeing ports.

(b) Freeing ports must be located to allow the rapid clearing of water in all probable conditions of list and trim.

(c) Except as provided by paragraphs (d) through (h) of this section, the aggregate clear area of freeing ports on each side of the vessel must not be less than 0.71 plus 0.035 times the length of the bulwark, in meters, for area in square meters, or 7.6 plus 0.115 times the length of the bulwark, in feet, for the area in square feet. The length of bulwark need not exceed 0.7 times the overall length of the vessel.

(d) Except as provided in paragraphs (e) through (h) of this section, for bulwarks which exceed 20.11 meters (66 feet) in length, the aggregate clear area of freeing ports on each side of the vessel must not be less than 0.07 times the length of the bulwark, in meters,

for an area in square meters (0.23 times the length of the bulwark in feet, for an area in square feet). The length of the bulwark need not exceed 0.7 times the overall length of the vessel.

(e) For a bulwark more than 4 feet (1.22 meters) in height, the freeing port area required by paragraphs (c) or (d) of this section must be increased in accordance with the following formula:

$i = [h - 4]0.04q$ ,  $(i = [h - 1.722]0.04q$ , for metric units), where:

$i$  = increase in freeing port area, in square feet (square meters);

$h$  = bulwark height, in feet (meters); and

$q$  = length of bulwark exceeding 4 feet (1.22 meters) in height, in feet (meters).

(f) For a bulwark less than 3 feet (0.91 meters) in height, the required freeing port area, required by paragraph (c) or (d) of this section, may be decreased in accordance with the following formula:

$r = [3 - h]0.04q$ ,  $(r = [h - 0.91 - h]0.04q)$ , where:

$r$  = permitted reduction in freeing port area, in square feet (square meters).

$h$  = bulwark height, in feet (meters).

$q$  = length of bulwark which is less than 3 feet (0.914 meters) in height, in feet (meters).

(g) For a vessel without sheer, the freeing port area must be increased by 50 percent.

(h) The area of the freeing ports on a vessel that operates on protected waters need only be 50 percent of the area required by paragraphs (c) or (d) of this section.

(i) Freeing port covers are permitted provided that the freeing port area required by this section is not diminished and the covers are constructed and fitted so that water will readily flow outboard but not inboard.

[CGD 88-079, 56 FR 40393, Aug. 14, 1991, as amended by CGD 96-046, 61 FR 57276, Nov. 5, 1996]

#### § 28.560 Watertight and weathertight integrity.

(a) Each opening in a deck or a bulkhead that is exposed to weather must be fitted with a weathertight or a watertight closure device.

(b) Except as provided in paragraphs (c) through (f) of this section, each opening in a deck or a bulkhead that is